

ENGINEERING ANALYSIS

Venture Oil and Gas, Inc.

Uriah, Monroe County, AL

Facility No.:106-0034

PROJECT DESCRIPTION

On July 1, 2013, Venture Oil & Gas, Inc. submitted a permit application to modify Synthetic Minor Operating Permit (SMOP) No. 106-0034-X005 by adding the proposed Marion Johnson 14-3 #1 Oil and Gas Production Well. The Marion Johnson Well would be located within one mile of the Coffin 14-10 and Andress 13-4 Wells in the NW/4 of Section 13, Township 4 North, Range 6 East in Uriah, Monroe County. This facility is expected to produce about 120 Mscf/day of natural gas and 100 barrels per day of oil with a BTU content of 1,188 Btu/scf. The gas analysis indicates that the gas contains 0.0013 mol% hydrogen sulfide (H₂S) in the gas stream. Flaring from this well would only occur during initial startup of the well. The gas would be routed to the nearby Uriah Gas Plant.

On March 2, 2011, the Department conducted a Greenfield Site Inspection of the Coffin Well. Since the proposed Marion Johnson Well would be located within one mile of this area, a Greenfield inspection would not be required for this project. However, a 15 day public comment period will be required.

PROCESS DESCRIPTION

The well stream would consist of crude oil, saltwater, and natural gas. The well stream would flow through the heater treater where the fluids are separated. The crude oil and saltwater are sent to separate storage tanks. The storage tanks would be equipped with a vapor recovery unit to capture vapors from the tanks. The natural gas stream from the heater treater would be sent through an electric compressor and then through the flare scrubber to drop out any remaining liquids prior to being used as fuel for the heater, burned in the flare, or routed to a gas plant for processing. Upon completion of the gathering pipeline from the gas plant to the well, the gas stream would no longer be flared. Instead, the gas would be compressed using an electric gas compressor engine and sent to the gas plant for processing. The flare would then only be used during emergencies, startup, shutdown, or when maintenance is being performed.

This well will consist of the following emission sources:

- One (1) 0.5 MMBtu/hr heater treater
- Emergency Flare-once gas can be sent to the gas plant
- Storage Tanks w/vapor recovery unit
 - Two (2) 16,800 Gallon Crude Oil Storage Tanks
 - One 16,800 Gallon Saltwater Storage Tank
 - One 21,000 Gallon Power Oil Storage Tank

EMISSIONS

The expected potential emissions from the proposed new well are given in Table 1 below. Emissions from the heater treater are based on AP-42 emission factors. NO_x and CO emissions from the Flare are calculated based on AP-42 emission factors. VOC emissions from the flare are calculated based on gas analysis from the Andress 13-4 Well.

Table 1: New Well Potential Emissions

	PM		NO_x		SO₂		CO		VOC		CO_{2e}	
Sources	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Heater Treater	0.004	0.016	0.049	0.215	0.001	0.004	0.041	0.18	0.003	0.012	58.5	256
Flare	0.00	0.00	0.40	1.77	0.01	0.048	2.19	9.63	1.58	6.925	810	3551
Total	0.004	0.016	0.449	1.985	0.011	0.052	2.231	9.81	1.583	6.937	868.5	3807

The facility-wide potential emissions are given in Table 2 below. These emissions are based on continuous flaring from each Well.

Table 2: Total Potential Emissions

	(Tons/yr)					
	PM	SO₂	NO_x	CO	VOC	CO_{2e}
Coffin 14-10 Well	0.03	3.737	29.17	156.75	95.13	52,352.172
Andress 13-4 Well	0.033	0.316	2.604	12.191	7.142	4,356.471
Marion Johnson 14-3	0.016	0.052	1.985	9.63	6.925	3,807
Total Emissions	0.079	4.105	33.759	178.571	109.197	60515.64

The expected facility-wide emissions are found in Table 3. Venture has requested that they remain a SMOP; therefore, they have proposed limiting the volume of gas flared from the Wells to maintain the facility-wide volatile organic compound (VOC) emissions and carbon monoxide (CO) emissions below 95 tons per any consecutive 12 month period. The expected emissions from the Wells are based on flaring a total of 1.205 MMScf/day (440 MMScf/yr) of natural gas.

Table 3: Total Expected Emissions

	(Tons/yr)					(Metric TPY)	
	PM	SO₂	NO_x	CO	VOC	Mass Sum	CO_{2e}
Coffin /Andress/Marion Wells	0.065	2.306	18.183	94.986	57.259	29,776.110	32,466.715

REGULATIONS

There are several regulations that could apply to the emissions sources:

ADEM Admin.Code R. 335-3-4-.01

ADEM Admin Code R. 335-3-4-.01(1) states that no person shall emit to the atmosphere an opacity of greater than twenty percent (20%) over a six (6) minute period. All wellsite emission points would be subject to this regulation.

ADEM Admin.Code R. 335-3-4-.03

Table 4-1 of ADEM Admin. Code 335-3-4-.03 assigns the heater treater an allowable particulate matter emission rate of 0.5 lbs/MMBtu. Emissions from the heater treater would be well below the allowable emission rate since natural gas would be the only fuel source.

ADEM Admin. Code R. 335-3-5-.01(1)(b)

ADEM Admin. Code 335-3-5-.01(1)(b) assigns the heater treater an allowable sulfur dioxide emission rate of 4.0 lb/MMBTU. Emissions from the heater treater would be well below the allowable emission rate since the heater treater would burn natural gas [$\text{H}_2\text{S} = 0.0013$ Mole %].

ADEM Admin. Code 335-3-5-.03(1-2)

ADEM Admin. Code 335-3-5-.03(1-2) covers sulfur emissions for petroleum production. Hydrogen Sulfide may not be emitted in a greater quantity than 0.10 grain per standard cubic foot (scf), or 160 ppmv, unless it is properly burned to maintain a ground concentration of less than 20 ppb beyond property limits, as averaged over a 30 minute period. According to the gas analysis, the H_2S concentration at the Marion Johnson Well is expected to be 12.5 ppmv.

ADEM Admin. Code 335-3-6-.03

ADEM Admin. Code 335-3-6-.03 applies to the loading and storage of volatile organic compounds. Per Rule 335-3-6-.03(4), this regulation does not apply to crude petroleum produced, separated, treated, or stored in the field. Since the tanks store crude petroleum at the production source in the field, this regulation does not apply.

40 CFR 63 Subpart HH

40 CFR 63 Subpart HH – National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities applies to major and area source Oil and Gas Production Facilities. Subpart HH requirements apply to sites equipped with tri-ethylene glycol dehydrators. Since the proposed well sites would not include a glycol dehydrator, no requirements of 40 CFR 63, Subpart HH apply to this facility.

40 CFR 60 Subpart Kb

40 CFR 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels applies to VOC tanks constructed after July 23, 1984. §60.110b(d)(4) states that vessels with a design storage capacity of less than, or equal to, 1590 m^3 (420,000 gallons) used for petroleum or condensate stored, treated, or processed prior to custody transfer are exempt from this regulation. Each of the tanks at the proposed sites would have a volume of less than 420,000 gallons; therefore, the tanks would not be subject to Subpart Kb.

40 CFR 60 Subpart OOOO

40 CFR 60 Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution establishes SO_2 and VOC requirements for natural gas production wells and natural gas processing plants constructed, reconstructed, or modified after August 23, 2011. The gas wells and storage tanks would be affected sources under Subpart OOOO. The following table summarizes the portions of this regulation that apply specifically to well sites as affected facilities under this regulation:

Applicable Affected Sources	Requirement(s)
Each single natural gas well [§60.5365(a)]	None, unless hydraulically fractured or re-fractured
Pneumatic Controller [§60.5365(d)(i)]	Per §60.5390, this applies to natural gas driven pneumatic controllers with a bleed rate of > 6 Scf/hr
Storage Tank [§60.5365(e)]	Per §60.5395, these requirements only apply to tanks with uncontrolled VOC emissions > 6 TPY; Requires that a control device be installed

Hydraulically Fractured Gas Wells [§60.5365(h)]	Per §60.6375: Capture all gases and liquids produced during the fracturing operation; Maintain a daily completion log; Submit notifications and annual reports
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As stated above this regulation is applicable to each gas well; however, the only applicable requirements for this well would be if the well was hydraulically fractured and if the uncontrolled VOC emissions from each of the storage tanks were greater than 6 TPY. The facility does not plan to hydraulically fracture this well and the emissions from the storage tanks are less than 6 TPY (application indicates 2 TPY of VOC emissions); therefore, there are no requirements for any affected sources under this subpart. However, if this status changes, the applicable requirements specified in the table above shall be complied with upon startup.

PSD/Title V/112g/Air Toxics

The potential emissions from these sites would not exceed the PSD major source threshold of 250 Ton/yr. Therefore, no PSD review is necessary. The potential VOC and CO emissions from these wells would be greater than the Title V major source threshold of 100 TPY; however, by limiting the total volume of gas flared to 440 MMScf/yr, the emissions would be maintained below the requested 95 TPY limit.

Because HAP emissions would not be expected to be greater than 10 TPY of any single HAP or 25 TPY of any combination of HAPs, a 112(g) case by case MACT review would not be necessary. This project is more than 100 km from the nearest Class I area, Breton Wildlife Refuge, and the emissions are not expected to have a significant impact on any Class I area. Therefore, no Class I Area analysis would be needed. The application did not indicate a significant amount of Air Toxics from the proposed units, nor does the Department expect any Air Toxics emissions of significant quantities to be emitted. Therefore, no Air Toxics Review will be performed for this project.

RECOMMENDATIONS

Based upon the analysis presented in the preceding paragraphs and pending the outcome of a 15-day public comment period, I recommend that the Department reissue SMOP No.: 106-0034-X005 to Venture Oil and Gas, Inc. for the Coffin 14-10/Andress 13-4 No. 1/Marion Johnson 14-3 #1 Oil and Gas Production Facilities.

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July 11, 2013
Date